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New Functions of Universities in Century XXI Towards "Fourth Generation" Universities

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Abstract Nowadays, many successful examples prove that universities have a significant role in the enhancement of different regions. The competitiveness of regions is affected and altered by globalization and other background processes that serve as arrangers of regional structure and for this reason they deserve attention. The modern economic development demands that due to the increased engagement towards the society and economy, the traditional activities of the universities should be diversified.

To be able to optimally exploit their potential regarding economic development, the presence of an outstanding educational culture it is necessary but not sufficient. It is also necessary to maintain high standards in quality regarding research activities and to promote the utilization of results in the local economy. Beyond the well-known typology of the first, second and third generation of universities that describe the above mentioned processes, the concept of the „fourth generation" of universities emerged in international literature that depicts interesting facts that are worth considering regarding the economic development activities of universities. The goal of this study is to review and systematize the active and passive activities of universities that enhance the competitiveness of a given region.

We process the available ideas regarding the presence of „fourth generation" universities and we attempt to integrate these into the scientifically accounted framework of university generations.

Keywords Universities - Economic development - Diamond-model
Higher education

JEL Classification I20 - I23 - I25 - R10

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1. Introduction

Several international examples probe that successful universities have a significant role in improving the competitiveness of their region and in many cases they are active participants in local endeavours focusing on economic development. To achieve appreciable results in economic development, the high standards in education are necessary but not sufficient requirements (first generation of universities). The presence of quality research is also required (second generation of universities). The third important aspect is the utilization of the scientific results originated from the university by the local actors (third generation of universities). Through this the competitiveness of local enterprises can be improved that could induce the competitiveness of the region. We can ask, who should mark the main strategic aims of each region where universities are active participants within economic and social networks?

Nowadays the competitiveness of regions is affected by globalization and other background processes that serve as rearrangers of regional structures and for this reason they deserve constant attention. In the global competition, immaterial assets like knowledge or social capital become key aspects, and engines of economic development. In regional studies, knowledge is identified as a crucial factor of regional development. Knowledge became the main asset of production, it is considered as a new engine of economic development, hereby the role of knowledge, innovation, technology and learning is necessary to be reconsidered. This can also be derived by the fact that the presence of innovation fundamentally determines the competitiveness of regions and continuous innovation is required to obtain competitive edge (Lengyel, 2000).

nnovation is present in many ways in differently developed regions, so it is important to emphasize that specific regions need to apply specific strategies of economic development (Lengyel 2003). Consequently the competitiveness of developed countries derives from their ability to create and utilize knowledge (Grosz and Rechnitzer, 2005). Universities have a significant role in shaping these processes, as their education and research activities are expanded with the fostering of economic and social development (Etzkowitz, 2002; Wright et al. 2008; Wissema, 2009). In this study, after considering these challenges, we would like to answer what the universities can do (by representing active or passive behavior) for the purpose of enhancing regional competitiveness?
To answer this question, first we must analyse the framework of the local embedment of universities. Afterwards we synthesize the potential effects of universtities on economic development from the input and output side. The analysis of the universities' socioeconomic environment will take place within a novel concept of the „Fourth Generation" of universities augmented with the Diamond model of modern universities. In the end we attempt to summarize the success factors of universities that can contribute to the optimization of local potential for the purpose of enhancing competitiveness.

2. The Local Embedment of Universities

The commitment with local economy has an even emphasized role regarding the operation of modern universities, as new needs emerge from the aspects of economy and

society. Several changes in economy, finance and society lead to the fact that universities initiated to explore their environment in a broader, novel approach, and they also engaged in local embedment, the enhancement of innovation activities and cooperation with local actors. The existence of these universities is a result of an adaptive process. Adaptivity is key element in this aspect, as several measures can take place on national or even regional levels, where the presence of conformity is crucial (Clark, 1998).
The „entrepreneurial” university of Clark (2001) is different from „traditional” universities, as the latter cannot secede from the habitual practises that are carved into stone, as the former endeavours to constantly renew their activities and to follow a certain contemporary approaches. Besides the entrepreneurial university can be considered as an insitution with strong will for expoloration and firm identity. The basis of the entrepreneurial university is a management-oriented leadership and the exploitation of market characteristics.

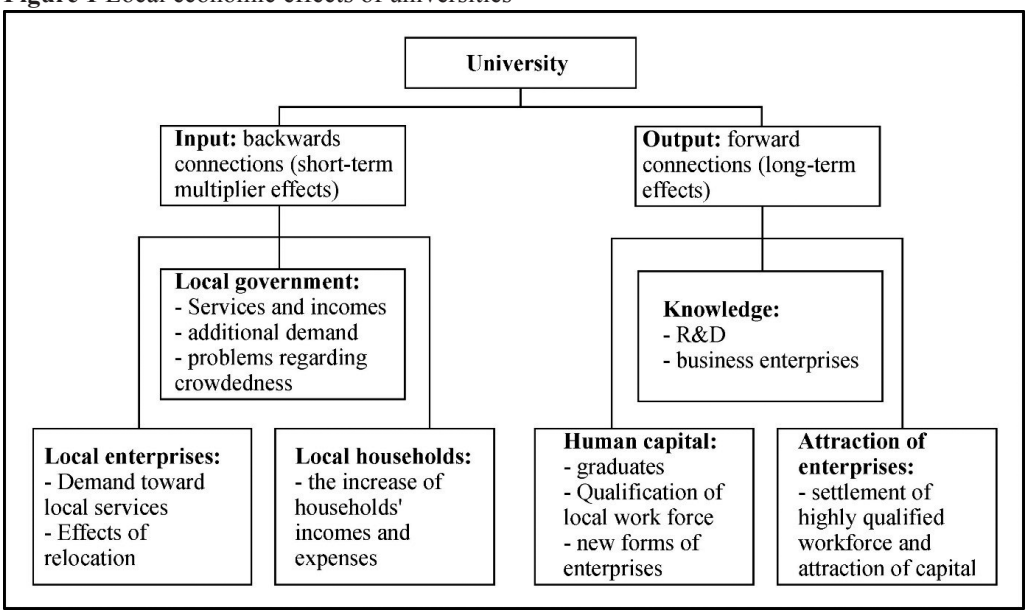
In parallel, Chatterton and Goddard (2000) write about regionally engaged universities. The authors locate this type of universities within learning regions. In these regions, the process of learning and the dynamic approach of planning have a significant role (Holbrook and Wolfe, 2002). The learning regions differ from regions where the fordist perspective is dominant, as the basis of competitiveness are not environmental resources and labour, but the creation of knowledge and continuous development. Here the presence of formal and informal networks is dominant (Florida, 1995, 533). Kitagawa (2005) also points out that the previously mentioned formal and informal factors are relevant in case of economic development, however this can only be successful, if knowledge transfer is clean and effective. Regionally engaged universities tend to connect their first, second and third mission activities to the local government, thus creating added value. Nowadays, some universities are locally embedded, however they compete globally for the claim of the best resources.

It does not matter which type of university we examine, their endeavours can be clearly expressed, their operational framework can be given. The purpose is to avoid that higher education institutions should exist isolated from the local economy, besides it is also important that research results should be utilizable by the local economy. In the long term, universities should contribute to the development processes of local communities (Benneworth and Dawley, 2005; Arbo and Benneworth, 2007).
According to Goddard and Puukka (2008, 19), higher education institutions can contribute to economic development through four dimensions. First, universities can assist in the creation of new sectors, or the formation of existing ones. Besides they can have a role in enhancing the willingness to create enterprises. Second, they can attract global firms towards the region with the existing infrastructure, highly qualified workforce and strong socioeconomic networks. In this case can also see that besides the local commitment, a global competition for the resources and capital takes place. Third, they can manage to diversify the business sector, and can aim to develop the quality of provided services. Fourth, they are able to connect to processes of dominant sectors of the region through counselling or other activities.

3. Effects of Universities on Economic Development

The effects of universities on economy can be categorized in two groups (Lengyel, 2008). These are short-term input effects and long-term output effects (Figure 1). Universities spend a significant amount of money to maintain and operate its own buildings. These services are ordered from local enterprises. The students, professors and research associates also spend some part of their earnings locally. The presence of the university urges local services and this increases the income of governments and generates demand towards public services.

Figure 1 Local economic effects of universities



Source: Lengyel (2008)

The short-term effects of the university (input side) affect the demand of local enterprises, the income and expenses of local households and the services and income of local governments. Thanks to universities, young and highly qualified graduates appear on the labor market. The local workforce is able to easily start new enterprises due to the recently acquired skills and abilities, thus institutes of education increase the appeal towards entrepreneurship. The freshly graduated workforce can attract enterprises from outside the region which leads to the establishment of new workplaces. The professors and researches of the university practice significant R&D activities (Lengyel, 2008). The long-term effects of universities (output side) can affect the qualification of human capital, the attraction of foreign capital and workforce into the proximity of the university and the number of enterprises based on university research. The input factors can be considered as triggers of secondary regional multiplier effects of the economic base model, as they vivify demand regarding local services. However this demand

does not generate substantive economic growth and barely creates new workplaces. The output factors trigger primary multiplier effects. New companies could come into existence that can create new workplaces in the region and are able to acquire income from outside the region.

The goal of Goldstein and Renault (2004) was to measure the contribution of universities to regional development and to attempt to separate the economic effects of universities' functions. The analysis targeted 312 metropolitan statistical areas of the USA from periods 1969-1986 and 1988-1998. The main unit of regional economic development is the annual average income per capita. To eliminate macroeconomic changes the average earnings of each area has been divided by the average earning of the USA in the same year and made as a percentile value. The dependent variable was composed of indices the difference of two following years.

The regional presence of universities is measured by four different variables. The first variable demonstrates if there are any universities in the region that are among the 50 best research universities in the proper period. The second variable demonstrates the sum of research expenditures of the region's universities. The third variable demonstrates the number of annual degrees given by all institutions of higher education of the region. The fourth variable demonstrates the patents owned by universities in a certain region. The authors defined control variables that help to explain the occurring changes in economic welfare of the region. These were the type of region representing the employment (small, medium, large), the geographical position of the region (Northeast, Central West, South, and West), the economic structure (processing industry, services), the accessibility (large, medium or small airport), entrepreneurial activities (incomes, patents) and the average earnings of a certain base year.

As a result of the research, the conclusion is that (Goldstein and Renault, 2004): The research universities significantly contribute to economic development in the second period. Between the two periods the Bayh-Dole Act that was accepted in 1980 started to have an effect so universities had the opportunity to possess intellectual ownership regarding their public funded research results. The research and development activities stimulate the economy more intensely patenting or license activities. Though patents are closer to economic utilization, the research and development expenditures have a far more significant effect. As the aggregated knowledge reaches economy through several channels, the R&D expenditures have effects through informal channels too. There is a negative connection regarding the labor market of graduates, as it represented certain fullness in the latter period. The more the number of graduates, the less the income, which is imputable to the fact that graduates bring down each other's opportunities, so the wages decrease. The only regional type where the presence of research universities is demonstrable is the micro-region, as the universities act as substitutes for urban agglomeration and they ensure several external effects. Bajmócy, Lukovics and Vas have applied the methodology of Goldstein and Renault to Hungarian micro-regions. They determined that the conclusions of Goldstein and Renault cannot be proven regarding Hungarian micro-regions and the innovational effects of universities in Hungary are insignificant (Bajmócy et al. 2009).

The universities and research facilities can significantly affect the development and competitive edge of a region directly and indirectly, besides it is often pointed out that the educational and research activities of the university can only be effectively optimized when their results are utilized by the economy, hence they can enhance economy (Bajmócy, 2006). According to Wissema (2009) nowadays the second big transition of universities takes places, which trend to the formation of so-called third generation universities (Table 1). In this phase, universities not only create professionals (first generation universities), professionals and scientists (second generation universities), but professionals, scientists and entrepreneurs at the same time (third generation universities).

Table 1 Some characteristics of the first, second and third generations of universities

Aspect	First generation universities	Second generation universities	Third generation universities
Goal	Education	Education and research	Education, research and utilization of knowledge
Role	Protection of truth	The cognition of nature	Creation of added value
Output	Professionals	Professionals and scientists	Professionals, scientists and entrepreneurs
Language	Latin	National	English
Management	Chancellor	Part-time scientists	Professional management

Source: Own construction based on Wissema (2009)

We can state that the enhancement of the competitiveness of a region can be expected from third generation universities, as this is where not only education and research are significant but the utilization of knowledge is also crucial. As a result the connection between industry and universities deepens, so there is an opportunity of the local utilization of knowledge created in universities, which enhances the competitiveness of the region through the enhancement of the competitiveness of enterprises (Vilmányi, 2011). Third mission activities are only meaningful, if the given university is successfully embedded in the local economy (Benneworth and Sanderson, 2009).

4. Economic and Social Environment of Universities

With the emerging of knowledge-based society the appraisement of human resources took place, as the competitiveness of economies largely depend on the quantitative and qualitative characteristics of human resources available. The education of these people is affected by universities, and these institutions have an increasing significance in

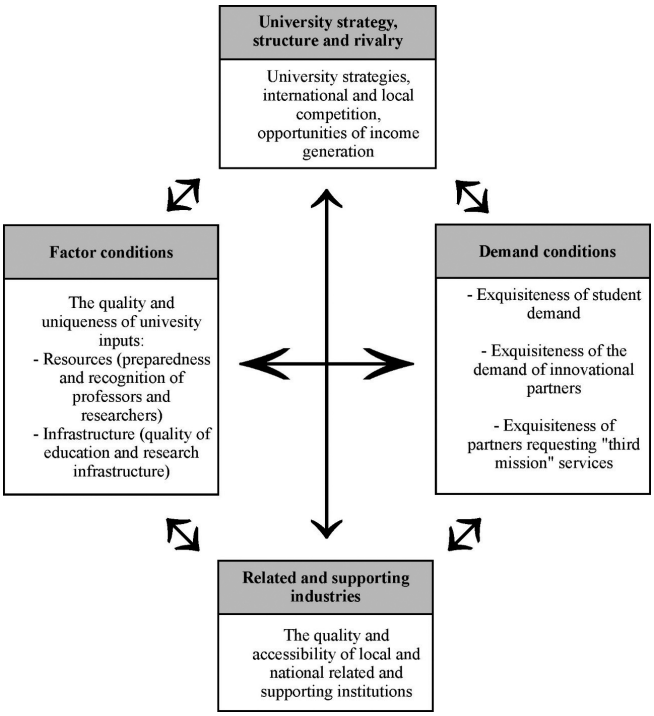
developed economies. At a regional level it is typical that networks around universities are positively revalued. The main concept of the classic Triple Helix (recently Quadruple Helix) is that in a given region, the actors of the academy-industry-government triangle keep their dominant activities, but overlapping activities also come into existence (Etzkowitz and Leydesdorff, 2000; Etzkowitz, 2002; Lengyel B., 2004; Etzkowitz, 2008).

Concepts that the Triple Helix can be extended are getting more widespread. This means a possible expansion with a fourth or even a fifth spiral. The literature defines the media, arts and civil sphere as the fourth (Quadruple Helix), and environmental, sustainability and nature-focused aspects as the fifth (Quintuple Helix) spiral within the innovational and knowledge-creation processes (Carayannis and Campbell, 2012; Carayannis and Campbell, 2014). The importance of knowledge transfer is always emphasized regarding the Triple Helix model, however the university has an important function from regional, socioeconomic aspects as well (Gibb et al. 2013). The social aspects are intensified in the Quadruple Helix model (Carayannis–Rakhmatullin 2014). Besides creating workplaces, the attraction of capital is also possible, and universities can also be intermediaries when it comes to communication with government institutions (Imreh-Tóth and Lukovics, 2014). Universities need to build strong relationships with the actors of the economy, government institutions and local society. This is necessary, as the collaboration of concerned actors is an inevitable factor of development (Lengyel, 2004). Based on the connection between the university and the business sphere, the knowledge created in the university becomes accessible and utilizable.

This can contribute to the competitiveness of enterprises, and also the competitiveness of the region (Lukovics, 2010). Nowadays, more and more universities want to participate in this procedure of enhancing development processes with the assistance of networks. The next step of this logic is the systematization of universities' economic and social environment. The Diamond model of Porter can be an adequate framework that systematizes the microeconomic business environment of enterprises (Lengyel, 2000b). The determinants of the original Diamond model can be translated in the context of universities, so we are able to define the factors that can contribute to the long term competitiveness of universities, assuming az international environment of competition (Figure 2). The determinants can be filled with new content.

In connection with factor conditions the human resources and infrastructure have the greatest significance. Here we can highlight the importance of both hard and soft elements. Here those factors are located that serve as a foundation of the competitiveness of universities. If professors are more qualified and if the infrastructure is more modern, the universities can accomplish a better position on the virtual global rankings of universities.

Figure 2 The diamond model of modern universities



Source: Own construction

Among factor conditions, mainly first and second generation university functions can be found, however regarding research infrastructure the "Third Generation" of universities also appears, as successful universities create economically utilizable results based on modern infrastructure and the preparedness of researchers.Demand conditions mean demand for all factors that serve as an output of the university. The sophisticated local demand motivates the universities from aspects of education, research and third mission. These are necessary but not sufficient requirements of internationally recognized competitiveness. In accordance with the input side it is important that highly qualified graduates with sophisticated knowledge should appear on the labor market on the output side. Demand conditions determine both quantity (critical mass of students) and quality (correspondence with students' needs) dimensions. It is also important to be able to attract the best national and foreign students. At this point we must emphasize the economic development functions of universities that can manifest in different forms. In developed regions universities can be active participants in economic processes, they are integral parts of local economy. We assume that here the economic structure of developed regions is evolved and the university is involved in this structure with its educational, research and third mission activities as well, thus participating in local economy. In less developed regions universities face the challenge of undeveloped structure of local economy. In these cases the additional function of universities

should be the proactive initiation of enhancing local economy. Related and supporting industries determine partners that can contribute to the success of universities directly or indirectly. Universities tend to have strong relations with the business sector and other universities or research facilities. In connection with university structure and rivalry it is fundamental that institutional documents should be written reckoning the characteristics of the local area, as this is a crucial element of success.

5. Fourth Generation" Universities

In the Diamond model of modern universities, certain functions appeared that goes beyond the classic interpretation of third generation university activities. The concept of „Fourth Generation" universities appears in the international literature, however there is no scientific consensus yet regarding the exact definition. This concept refers to the fact that nowadays the modern universities have to face global competition and they have to be able to proactively influence the socioeconomic processes of the region where they are located in. These processes and effects can contribute to the competitiveness of the region through complex direct and indirect systems on a diverse scale when it comes to regions with various levels of development. „Fourth Generation" university functions may give us an answer, how universities can proactively affect local economic development in less developed regions. We can point out that the name „Fourth Generation" may appear misleading if our expectation is that here the elevation of the „Third Generation" universities to a whole new level will occur. Regarding „Fourth Generation" universites the dominance of the academic actor of the Triple Helix model is dominant (Imreh-Tóth and Lukovics, 2014).

There is no scientific consensus yet regarding the topic or the definition, however the logical approach of this concept may advance our thinking regarding university-focused economic development. The study of Pawlowski (2009) can be considered thought-provoking. The author analyses the effect of „Fourth Generation" universities regarding local development. He introduces a Polish university, namely the WSB-NLU, based in Nowy Sacz in the NUTS2 region of Małopolskie, where the GDP per capita rate is 56% of the EU28 (Eurostat, 2014). He concluded that the most distinguishing factor of these universities is proactivity. With this the purpose of the higher education institution is to be able to crucially affect the transitions of local economy and society, considering the needs of knowledge-based society. The logic of „Fourth Generation" universities is broader than „Third Generation" universities from the aspect of the potential effect that they can trigger in local economy and society. „Fourth Generation" universities actively shape their socioeconomic environment. In connection with the effect of „Fourth Generation" universities we must emphasize the importance of responsible innovation. This is a function that we can clearly identify with a characteristic of „Fourth Generation" universities. It is true that R&D activities and innovation promises a dynamic leap in development, however we must concern ethical and unpredictable effects as risks as well (von Schomberg, 2013; Sutcliffe, 2013). The avoidance of these effects is only possible after they have already appeared, however, intervention at this time may seem late and expensive. As a preventive answer to this challenge, the topic of Responsible Research

and Innovation (RRI) was developed. The theory of RRI attempts to answer, how can we responsibly get involved in R&D and innovational activities so they can be socially accepted, democratic and contributes to innovational purposes regarding society (Owen et al. 2012; von Schomberg, 2013; Sutcliffe, 2013). Considering these points, this can emerge as a function of „Fourth Generation" universites. RRI is currently a significant topic around the world that even affects the innovational policy of the European Union more and more (EC, 2013a; EC, 2013b). In this concept, the escalation of the strategic approach and the innovative, flexible organisational culture also have a crucial role. Nowadays the effective and strategic planning of the future is an ever present condition. The universities of less developed regions must convert towards a proactive thinking, as due to the changes in resource-absorption circumstances they need to broaden their profile with activities that can create profit from government (national and EU tenders), entrepreneurial (utilization of patents) or social (cultural activities) dimensions. Towards achieving success, universities should abandon stiff organizational structures. The essentiality of „Fourth Generation" universities can be seized with the strategic approach as we are in an era where economy, society, globalizational processes and information technology are especially important. Nowadays universities need to position themselves more accurately on local, regional/national and global levels. The creation of excellent workforce, the utilization of innovational results and the participation in networks are crucial factors. The Triple Helix connections can catalize favourable processes, so collaborations become numerous. Following the logic of Wissema, we can bring the categorization to a whole new level (Table 2).

Table 2 Some characteristics of the first, second, third and fourth generations" of universities

Aspect	**First generation universities**	**Second generation universities**	**Third generation universities**	**„Fourth Generation" universities**
Goal	Education	Education and research	Education, research and utilization of knowledge	Education, research utilization of knowledge and proactive economic development
Role	Protection of truth	The cognition of nature	Creation of added value	Creation of strategic aims, and the role of the engine in local economy
Output	Professionals	Professionals and scientists	Professionals, scientists and entrepreneurs	Professionals, scientists, entrepreneurs and competitive local economy

Aspect	First generation universities	Second generation universities	Third generation universities	„Fourth Generation" universities
Language	Latin	National	English	Multilingual (national and english)
Management	Chancellor	Part-time scientists	Professional management	Professional management and local experts

Source: Own construction based on Wissema (2009)

Besides education, research and the utilization of knowledge, proactive, future-oriented economic development is also a goal regarding „Fourth Generation" universities. In this model the university is both the catalyst and engine of economy, it has a great role in highlighting strategic aims. It also creates and forms the community of experts, researchers and entrepreneurs. The multilingual operation here becomes necessary as a result of international cooperations and networks. The professional management is responsible for important strategic and operative activities. Here the role of locally experienced and informed economic development experts is emphasized.

6. Characteristics and Elements of a Successful „Fourth Generation" University

As a result of analyzing the competitive role, the potential economic development effects and the economic-social environment of universities we can create the virtual model of successful fourth generation universities. The characteristics of successful universities can be determined, as the contemporary global higher education rankings have their own criteria and methodology regarding successful universities from the aspect of education and research. The success factors in connection with third mission can also be determined through the analysis of university strategies.

Based on this logic, we made an empiric research to analyse the success factors of internationally acknowledged universities. In the first phase of the secondary research we analysed the methodology, indicators and criteria of 6 international higher education rankings. Considering that these ranking are based on first and second mission activities, the exploration of success factors regarding third mission is impossible. We unraveled the solution for this challenge in the second phase of our secondary research. Here we analysed the activities and strategy of a total of 22 successful universities. Based on the results of this research and the previously mentioned university concepts, we attempt to systematize the success factors of „Fourth Generation" universities. The foundation of the model is composed by the determinants of the diamond model of universities. This basically determines the effective operation of the university (e. g. the profitability of financial resources, highly educated human capital and infrastructure). The two pillars represent the traditional activities of education-research and third-fourth mission. In these pillars the most important success components are represented, that contribute to the efficient operation of the university if integrated properly. The education-research

pillar and third mission pillar both consist of certain components, which were determined through a secondary research (we used 59 variables) and later on they were summarized then contracted. It is important to point out that the location of these components within the pillars is not hierarchic.

The first component of the education-research pillar is internationalism/mobility. When discussing mobility we can talk about student and research associate dimensions. With internationalization a "Fourth Generation" university has to support mobility of students. The possession of a wide system of networks is necessary to ensure opportunities and mobility programs for students with adequate financial sponsorship. Openness regarding foreign students is also important. These aspects must predominate when it comes to welcoming acclaimed researchers and professors. The criteria of internationalism can be highlighted within the higher education rankings so it is important to mark it as a success factor.

The second component of the education-research pillar is education. This consists of the educational portfolio that describes the available BA/BSc, MA/MSc and PhD programmes and vocational trainings. The education as success factor concentrates on qualitative dimensions as well.

The third component of the pillar is research. Besides education, research is one of the universities' fundamental activities. Here the presence of internationally acknowledged publications, conference attendances, and academic fame also has a significant role. Here we only include research activities that are not offered as services to external institutions. It is important to highlight that modern "Fourth Generation" universities need to focus on the utilization of innovational results besides high-quality RRI. University commitment is crucial when it comes to protecting the future. This activitiy may become the most important function of "Fourth Generation" universities despite that this is a success factor that cannot be derived from higher education rankings.

The first component of the third mission pillar is transfers. We can distinguish knowledge transfer and technology transfer. The approach of knowledge transfer trends towards tacit, while technology transfer trends to codified knowledge and the flow of information.

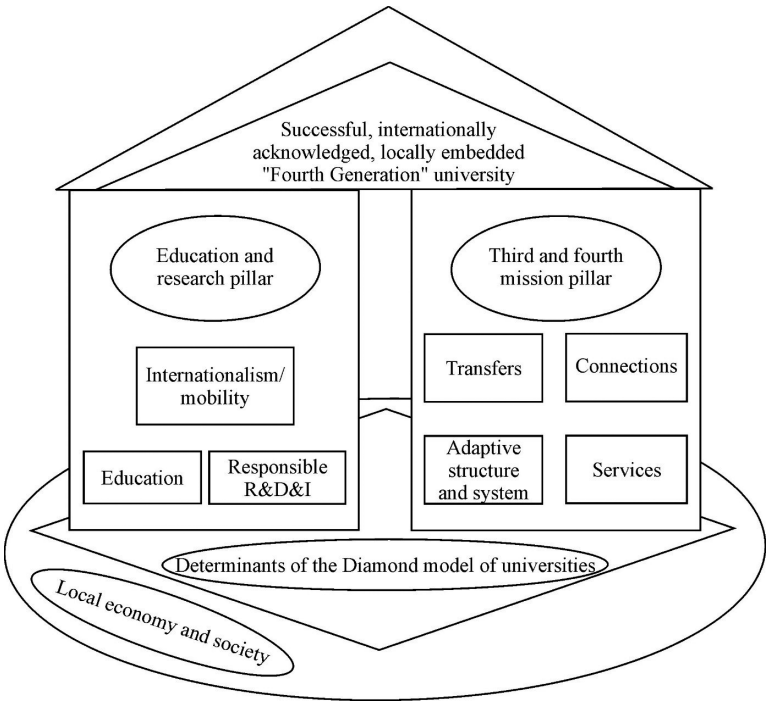
The second component of the pillar is connections. We can discuss both internal and external connections. Internal connections on national level mean connections of university-industry-government (Triple Helix model), while external conditions are determined as international networking activities from the aspect of the university-industry-government. It can be advantageous if they manage to connect with business actors and local organizations. In this case the induction of significant economic effects emerges as a primary goal. In case of a "Fourth Generation" university it is important that network connections, innovational collaborations have significant and economically utilizable results that can answer current challenges. In a continuously changing world, constant innovation, new ideas and solutions are crucial factors of success. Through excellent research the university can foster the enterprises of a given region.

The third component of the pillar is the adaptive structure and system. This can be defined as a flexible organizational structure that considers planning, organizing, directing

and monitoring in a way that recognizes the most efficient operation opportunities in the local area. This includes reaction to local labour market needs and research needs of local economy and the formation of economic aims. The adaptive structure and system can be defined as a management-focused leadership that proactively builds upon the exploitation of local capabilities and operates within an innovative, flexible organizational structure.

The fourth component of the third mission pillar is services. As a result, universities can widen their basis of income, besides it can contribute to the development of local economy, moreover it can support and improve enterprises with activities like certain economic and entrepreneurial services and R&D activities presented to external companies. As a result, we can create the virtual model of modern universities (Figure 3).

Figure 3 The virtual model of an internationally successful university that supplies the needs of local economy and society



Source: Own construction

The top element of the virtual model is the strategic goal of the university, namely the achievement of international acknowledgement, local embedment within the framework of fourth generation universities. The vision of modern universities is the attainment and maintenance of national and global welfare through the successful adaptation of this framework The concept of a successful, locally integrated fourth generation university gives an answer to the question „What?”, however the question „How?” remains open.

This can be solved and answered by adapting the ultimate strategic goal considering the characteristics of the local economy and society, namely we reconfigure the added value of universities regarding the attributes of the local area.

7. Conclusions

In this study we reviewed and systematized the active and passive activities that can enhance the competitiveness of a certain region. We conceived the potential effects of universities on economic development that can be connected to input-output and short or long term factors. After this we analyzed the socio-economic environment of universities. We detailed an interesting concept, namely „Fourth Generation" universities and we attempted to install this framework into the structure of university generations. We outlined the diamond model of modern universities and introduced a virtual university model consisting of success factors that mainly affect the competitiveness of the given region. The indirect purpose of our study was to form a basis for further research, thus the analysis of „Fourth Generation" universities – the confirmation or the denial of their existence – can be continued. As we emphasised in our study, the naming and topic of „Fourth Generation" universities cannot be considered scientifically proven, this can mainly be a focus on the academic element of the Triple Helix model, as in this case the university can necessarily be a dominant actor regarding local economic development. The question is, are the functions of „Fourth Generation" universities adequate as novums for a transition in generations? It is true that the „leaps" between the first-second, and second-third generations was more dominant, as we mentioned in our study previously. From this aspect it is imaginable that we should speak of a 3.5 generation of universities. Can another huge transition come into existence, as we experienced beforehand? If yes, what functions will this concern? If universities expand their activities with new functions, can we name this institution a classical university, or should we consider these as „hybrid" institutions after this that adapted due to the changed social/economic/environmental needs and challenges of a region? Questions like this can be proposed regarding this topic, however we are sure that the discussed logic of „Fourth Generation" universities can advance our concepts and thinking in connection with university-oriented economic development, especially in less developed regions.

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